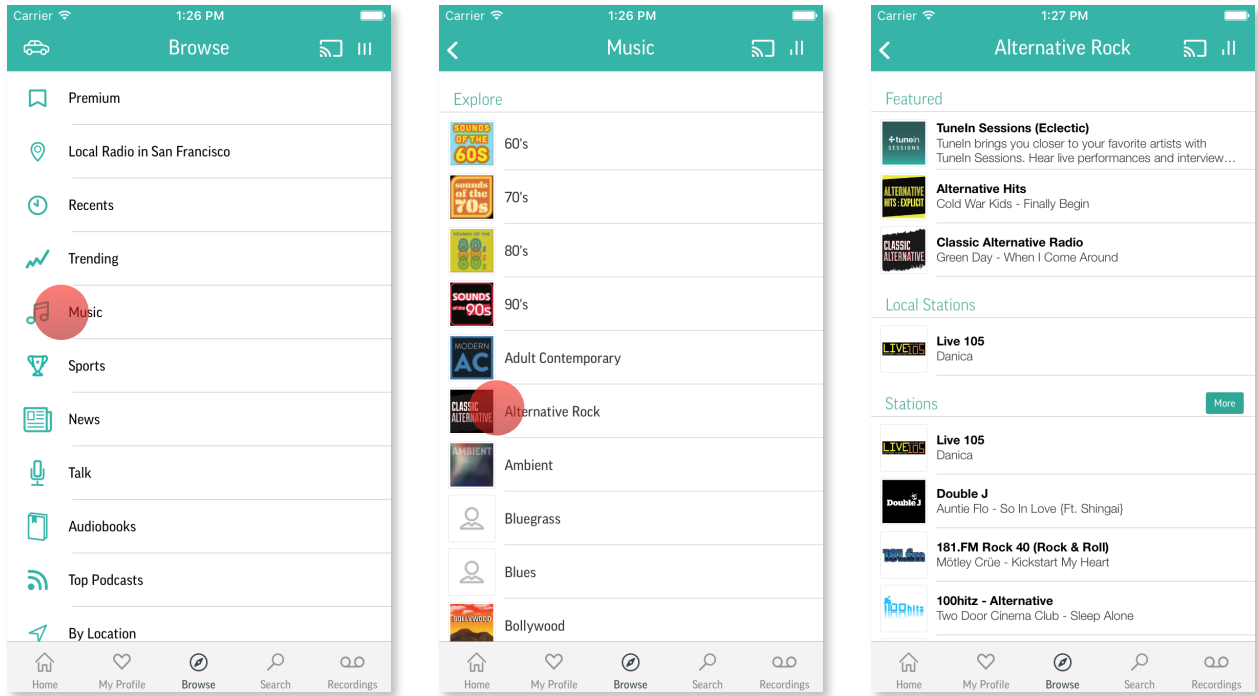# TuneIn Mobile Engineering Interview Challenge

## Objective

Your goal is to work with the TuneIn OPML API and create a navigation hierarchy for our directory:



**NOTE:** The screenshots above are for reference only. The android version of our app behaves similarly.

You may use whatever public, legal resources that you have access to on the internet. Open source libraries that are not GPL licensed will be fair game. We only stipulate that you do not ask other people for help with this challenge and work only with Android Studio and Gradle. Also target API Level >= 21 (Android 5.0, Lollipop). Please allocate no more than 2-3 hours for this exercise. Please zip up your project and submit as an email attachment. If the attachment is too large, you can also link to your project on github/dropbox/google drive/etc. Please email us if you have any questions regarding this challenge.

What we expect is a navigation stack to browse the TuneIn directory and display associated information (including any **text**, **subtext**, and **image** data associated with an element). Playing audio streams and adding visual enhancements should be a secondary consideration and are not a requirement for this challenge. Unit tests are also not required.

# The OPML API

*OPML (Outline Processor Markup Language) is an XML format for outlines (defined as "a tree, where each node contains a set of named attributes with string values").*

At TuneIn, we roughly follow the version 1.0 spec, with our own slight modifications. To access the TuneIn directory, make an API call to: **http://opml.radiotime.com/**

This will return a list of OPML outline elements:

```
<opml version="1">
<head>
  <title>Browse</title>
  <status>200</status>
</head>
<body>
  <outline type="link" text="Local Radio"
    URL="http://opml.radiotime.com/Browse.ashx?c=local" key="local"/>
  <outline type="link" text="Music"
    URL="http://opml.radiotime.com/Browse.ashx?c=music" key="music"/>
  ...
</body>
</opml>
```

Optionally, the query parameter render=json (http://opml.radioime.com/?render=json) can be appended to ALL URL's, and returns the equivalent JSON representation:

```
{ "body": [
  { "URL":"http://opml.radiotime.com/Browse.ashx?c=local",
    "element":"outline",
    "key":"local",
    "text":"Local Radio",
    "type":"link"
  },
  { "URL":"http://opml.radiotime.com/Browse.ashx?c=music",
    "element":"outline",
    "key":"music",
    "text":"Music",
    "type":"link"
  },
  ...
],
"head":
  { "status":"200",
    "title":"Browse"
  }
}
```

When the user selects an element, follow the **URL**. For example, tapping on Local Radio should retrieve content from http://opml.radiotime.com/Browse.ashx?c=local(&render=json). The subsequent call will return another list of outline elements. Eventually, you will come across elements with the **type** of **audio** like the following (or equivalent in json form):

```
<outline type="audio" text="88.5 | KQED-FM (National News)"
  URL="http://opml.radiotime.com/Tune.ashx?id=s34804" subtext="'City of Thorns' - Fresh Air"
  image="http://cdn-radiotime-logos.tunein.com/s34804q.png" ... />
```

This element is a leaf node and will return a m3u playlist with the actual audio stream.

The response may also contain sections that group a list of elements. For example, the Alternative Rock category has a "Featured" section as in the above screenshot:

```json
{ "body": [
  { "children":
    [ { "URL":"http://opml.radiotime.com/Tune.ashx?id=s246119",
        "bitrate":"192",
        "element":"outline",
        "formats":"mp3",
        "genre_id":"g2748",
        "guide_id":"s246119",
        "image":"http://cdn-radiotime-logos.tunein.com/s246119q.png",
        "item":"station",
        "now_playing_id":"s246119",
        "playing":"Nada Surf - Electrocution",
        "preset_id":"s246119",
        "reliability":"89",
        "subtext":"Nada Surf - Electrocution",
        "text":"RVRB (US)",
        "type":"audio"
      },
      { "URL":"http://opml.radiotime.com/Tune.ashx?c=pbrowse&id=p732726",
        "current_track":"TuneIn brings you closer to your favorite...",
        "element":"outline",
        "genre_id":"g78",
        "guide_id":"p732726",
        "image":"http://cdn-radiotime-logos.tunein.com/p732726q.png",
        "item":"show",
        "preset_id":"p732726",
        "subtext":"TuneIn brings you closer to your favorite...",
        "text":"TuneIn Sessions",
        "type":"link"
      }
      ...
    ],
    "element":"outline",
    "key":"featured",
    "text":"Featured "
  },
  ...
],
"head":
  { "status":"200",
    "title":"Alternative Rock"
  }
}
```